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The Structure of Labor Markets in Developing Countries

Time Series Evidence on Competing Views

William F. Maloney

The informal sector behaves as an unregulated entrepreneurial sector rather than the disadvantaged segment of a dual labor market. Overall, it expands in upturns and contracts in downturns, though there is some evidence of queuing to enter the formal sector.

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Summary findings

Competing conceptions of the large, unprotected, "informal" workforce in developing countries differ greatly in their implications for the labor reform considered to be essential complements to trade liberalization and "fair" competition in international trade.

Traditionally, the informal sector is viewed as the disadvantaged segment of a dual labor market segmented by legislated or union-induced rigidities and high labor costs in the protected (or "formal") sector. In this view, the size of the informal sector is a testament to the inefficiencies in labor allocation and the magnitude of required reform. In cyclical downturns, the informal sector is thought to absorb displaced workers from the formal sector (with informal earnings falling relative to those in the formal sector) and then to contract again during recovery as the queue for "good jobs" shortens again.

A recent, related view postulates a long-term trend in which large enterprises, confronted by heightened global competition, increasingly subcontracts to unprotected workers as a way to reduce costs and gain flexibility. This is particularly relevant in the debate about establishing common labor standards in regional trade agreements.

Maloney reexamines the traditional view of the dual labor market by studying the dynamics between the formal and informal sectors across a business cycle and a period of trade liberalization in Mexico (1987–93).

He shows conventional comparisons of earnings, even across time, to be unreliable tests for segmentation. As an alternative, he shows that transitions on informal employment, the size of the informal sector, and levels of mobility to be procyclical, increasing with upturns, and decreasing with recessions. He tests for, and finds, however, some evidence of queuing to enter formal employment.

Overall, he contends, the informal sector behaves as an unregulated entrepreneurial sector rather than the disadvantaged wing of a dual labor market. There is evidence of increased subcontracting over time, with trade liberalization, but it is not clear that workers are worse off as a result.

This paper — a product of the Poverty and Economic Management Unit, Latin America and the Caribbean Region — is part of a larger effort in the region to reexamine the role of the informal sector. The study was funded by the Bank's Research Support Budget under the research project "The Informal Sector in Mexico" (RPO 680-59). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Marta Cervantes, room I8-095, telephone 202-473-7794, fax 202-522-0054, Internet address mcervantes@worldbank.org. The author may be contacted at wmaloney@worldbank.org. June 1998. (29 pages)

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I. Introduction

The competing conceptions of the large, unprotected or "informal" work force in developing countries differ greatly in their implications for the labor market reforms deemed essential to complement other liberalization measures,[1] as well as issues of "fair" competition in international trade.

The traditional view sees informality as the disadvantaged segment of a dualistic labor market segmented by legislated or union-induced rigidities and high labor costs in the protected or "formal" sector.[2] The large size of the sector thus testifies to the extent of inefficiencies in labor allocation and the magnitude of required reforms. Downward formal wage rigidity also implies strong predictions about sectoral interactions across time. In cyclical downturns, the informal sector is thought to absorb displaced formal sector workers, informal earnings falling relative to those in the formal sector, and then contract during recoveries as the queue for good jobs shortens again. A recent and related approach also postulates a long term trend where large enterprises, confronted by heightened competition in global manufacturing, increasingly sub-contract to unprotected workers as a means of reducing costs and gaining flexibility.[3] The issue is thus particularly relevant to the debate over establishing common labor standards in regional free trade agreements.

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[1] See, for example, World Bank (1995).

[2] The Harris-Todaro (1970) model is perhaps the traditional statement of this view. See also Sabot (1977), and Mazumdar (1983). An alternate view within the segmentation literature sees dualism as arising endogenously from efficiency wage type considerations that induce larger firms to pay remuneration above market clearing (See Stiglitz, 1974; Esfahani and Salehi-Isfahani,1989). See Rosenzweig (1988), Fields (1990), Thomas (1992), Tokman (1992), Portes and Schauffler (1993), Portes (1994) for overviews.

[3] See Piore and Sabel (1984), Beneria (1989), Portes, Castells and Benton (1989), Portes and Schauffler (1989), Tokman (1992) and most recently articles in Blank and Freeman (1994). The U.S. Department of Labor has sponsored two studies on the informal sector: *Workers Without Protections: Case Studies of the Informal Sector in Developing Countries* (1993) and *The Informal Sector in Mexico* (1992).

However, there is some support for an alternate conception that sees the lack of protection as one dimension of an unregulated, yet dynamic, sector of small scale entrepreneurs many of whom enter the sector voluntarily and who choose, and are able, to remain largely outside the formal regulatory structures.[4] Labor markets may therefore be broadly integrated, and the existence of unprotected labor is not in itself evidence of segmentation. Arguably, workers contemplating self-employment would wait for an auspicious business climate before leaving a protected job to launch their enterprise and would be more likely to fail during a downturn, inverting the counter-cyclical patterns of entry and exit predicted by the dualistic view. As will be argued, the benefits of being informal may extend even to subcontracting relations which are generally thought to benefit only the employer.

Research on the informal sector has largely relied on case studies, or static comparisons of earnings differentials which tend to show that formal sector workers earn more given their human capital. But to date, the data have not existed to study sectoral interactions across time. This paper takes advantage of an extraordinary longitudinal data set from Mexico that permits an examination of the dynamics among the various subsectors of the labor markets from 1987-1993. This period encompasses a complete business cycle, a far reaching trade reform, and pursuit of regional integration through NAFTA.

The paper first argues that traditional earnings comparisons are not reliable measures of segmentation, even when viewed across time. It then examines movements in relative sector sizes, the role of the various sectors in generating and absorbing the unemployed, and the changing patterns

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[4]See, for example Hart (1972), de Soto (1989), Tokman (1992), Fields (1990), Turnham and Eröcal (1990), Portes and Shauffler (1992).

of mobility among sectors across the business cycle. It also explicitly explicitly tests for queuing to enter formal sector employment. Overall, the second "entrepreneurial" view emerges as the better first approximation. The last section offers preliminary evidence on the incidence of subcontracting and its impact on worker welfare by tracking the composition of the labor force after trade liberalization in a more comprehensive way than has been possible to date.

II. Data

The Mexican case is well-suited to the study of dualism, informality, and subcontracting. First, roughly 40% of the urban labor force works without labor protections. Second, an archaic and onerous system of labor regulation, dating back over half a century, grants little flexibility and drives up labor costs. The Constitution conceives of the employment relationship as a lifetime contract and workers may only be fired under extreme circumstances and at great cost. For their part, workers lose generous severance pay and may lose their pensions if they quit, and enjoy no unemployment insurance should they be laid off. Taken at face value, the labor code thus discourages the mobility necessary to ensure an efficient allocation of workers and jobs, and constrains employers in their management of personnel. Legally mandated non-wage compensation drives a wedge of 30-60%, substantially above those for other OECD countries. Third, the radical trade reforms beginning in 1986 and the subsequent pursuit of regional integration through NAFTA converted a relative closed economy to one competing aggressively in both import and export markets. The resulting adjustment of its labor market can offer some preliminary observations on the issue of globalization and subcontracting.

The National Urban Employment Survey (NUES) conducts extensive quarterly household

interviews in the major metropolitan areas and is available from 1987 to 1993. This permits the generation of time series of relative earnings for each sector at quarterly frequency. The NUES is also structured so as to generate panels which allow tracking a fifth of each sample across five quarters. Workers are matched by position in an identified household, sex, level of education, and age to ensure against generating spurious transitions. These panels permit sketching patterns of mobility among sectors that can be tracked across the seven year period. The analysis restricts itself to men aged 16-65 with a high school education or less.

While the term "informal" suffers from overly broad and imprecise usage, it refers here to owners and workers in firms under 16 employees who do not have social security or medical benefits and are therefore not protected.[5] Four sectors of paid work are studied that include formal salaried employment and three "informal" sectors: The self-employed including owners of informal firms; the informal salaried, those working in informal firms; and contract workers, those who do not receive a regular wage or salary, but who are paid as a percentage, by piece, on commission, or fixed contract. They may be affiliated with a larger firm that provides raw materials, but work independently and are those most likely to be involved in subcontracting relations. There is also a residual "other" category (not shown) that includes firm owners who are protected, and owners and unprotected workers in firms of over 16 people. The remainder of the interviewed population (to total 100%) is divided into three classes of individuals who are not working: those out of the labor

[5] There appear to be workers at larger firms who do not report having benefits, however this is stretching our idea of informality beyond the smaller scale industries usually contemplated and may, in addition, be due to measurement error. Since it is often the wife of the worker who is at home at the time of the survey, it is entirely possible that they are not informed about their husbands true employment conditions. STPS also argued that there may be some very transitory workers for large firms not covered in violation of the law.

force, not currently working and not searching; those studying; and the unemployed.[6]

Movements among sectors are best captured in transition matrices that present the conditional probability of finding a worker in sector j at the end of the period given that the worker began in sector i, P_{ij}, as well as initial and terminal sector sizes, $P_{i.}$ and $P_{.j}$. As this would require 24 large matrices to cover the sample period, figures 1and 2 instead graphically present elements of these matrices serially. Figure 1 shows the evolution of the sectoral composition of the interviewed population $P_{i.}$ using the entire sample. Figure 2 plots the probability of transition into and out of the formal sector standardized by the probability that in a random reshuffling a worker would finish in the terminal sector (relative sector size) $P_{ij}/P_{.j}$. Figure 3 presents median hourly real earnings, adjusted for human capital.[7]

III. Overview of the Period.

Using the median hourly real earnings in each sector in figure 3, and the macro-aggregates in tables 1-3, we can divide the period 1987-1993 broadly into three phases, recession, recovery, and slowdown.

Phase I: As Lustig (1992) details, 1986 and 1987 were years of deep recession surrounded by the uncertainty of the success of the stabilization and reform programs. The balance of payments

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[6] The definition of unemployment differs slightly from the official which includes those searching for work. It includes this group, plus those who are waiting for the response to an application, a call from an employer that is expected in 3 months or less, the next cycle of work, and those who consider that there is currently no work or that they would not be given work if they applied. It then subtracts those in school who are looking for work because they already occupy the category of "Studying." This generates a statistic that broadly tracks, although is above the official rate tabulated in table 1.

[7] The medians were calculated conditional on experience, experience squared, education and education squared.

crisis in mid-1985 led to extreme contractionary measures which were undermined by the 50% fall in oil prices in 1986. GDP fell by 3.8% and manufacturing wages fell another 5.9%. Before turning up again, real wages had fallen a cumulative 39% since the beginning of the crisis. As figure 3 suggests, the recession had a depressive effect on earnings through 1987, which, in all sectors, show great downward flexibility. During this period, Mexico embarked upon the first wave of dramatic trade liberalization: From 1985 to 1990, maximum import tariffs fell by 50% while import licensing fell to a quarter of previous levels.[8] The depreciated peso and depressed wages, however, initially provided some cushion of competitiveness.

Phase II. As table 2 shows, economic growth began a moderate recovery in 1987, 1.86%, that would peak at 4.46% in 1990. In December, the Economic Solidarity Pact, a joint agreement of government and formal representative of labor, and the business sectors was implemented that featured a comprehensive incomes policy supported by reduction of the fiscal deficit, tighter monetary policy, and trade liberalization.[12] The Pact successfully reduced inflation to 1.2% per month in the second half of 1988. Although employment growth was moderate and concentrated heavily in the construction sector, in 1990 open unemployment fell to 2.6%, its lowest level since 1976 (see tables 1 & 3). As figure 3 shows, from 1988:1 to roughly 1990:3, earnings in all sectors grew concomitant with the tightening labor market, especially in the self-employed and contract sectors where they rose over 30%. In 1990, the government initiated discussions of a free trade agreement with the United States.

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[8] See Lustig (1992) and Maloney and Azevedo (1996)

[12] In February 1988, the government effectively froze public prices and the exchange rate, and minimum wages were raised 3% then fixed. For its part, the private sector committed to not raising prices.

Phase III: The economy began to soften from 1992-1993 with growth rates slowing dramatically to .45% in 1993, sustained only by continued growth in the non-manufacturing sectors. The official measure of unemployment again rose to 3.4% as manufacturing shed workers and job creation in the construction and commerce sectors slowed. Earnings in all informal sectors declined in absolute terms and relative to formal sector wages which stagnated.

The next two sections test the competing hypotheses outlined previously by examining first, the behavior of earnings differentials and second, patterns of mobility across the period.

IV. Relative Earnings Movements and Segmentation.

Figure 3 reveals clear patterns in relative earnings. First, seemingly contradicting the segmentation arguments, self-employment pays generally better than formal sector employment. Second, the similarity of the behavior of contract worker earnings suggests that these two sectors are closely related. Third, informal salaried workers appear to receive consistently less than the formal sector wage.

The literature on dualism has relied almost exclusively on these kinds of cross-sectoral earnings comparisons, finding higher formal sector earnings to be evidence of segmentation.[13] However, the interpretation of earnings differentials cannot be this straightforward since the specific characteristics of work that pertain to or even define the formal and informal sectors affect earnings in each sector and make it unclear what the magnitude or sign of the differential should be even in an unsegmented market. In a market with no distortions, earnings in the informal sector should rise

[13] See Rosenzweig (1988). Somewhat unusually, Marcouiller, Ruiz, and Woodruff (1994) find higher mean earnings in the Mexican informal sector than the formal.

above that in the formal sector to compensate for the expected value of benefits received by formal sector workers. Similarly, formal sector workers would require compensation for taxation which informal sector workers may often avoid. Formal salaried work and informal self-employment may also differ in hours worked, degree of risk taken, degree of independence, and costs of capital invested that may further drive a wedge between reported earnings. Informal salaried workers are frequently young and related to informal entrepreneurs and thus their earnings may be net of training costs or unobserved payments in kind. In the absence of information on these factors, the magnitude of the distortion-free differential cannot be known a priori and the interpretation of the raw earnings differentials reported in previous studies as evidence of segmentation becomes less clear.

In fact, it is arguable that the customary strategy of establishing segmentation by observing earnings differentials should be inverted. There is some reason to believe that Phase II represents a period absent of segmentation: As Bell (1994) and Davila (1996) have argued, the minimum wage was not binding and the historically low unemployment rates were held by Lustig to be the result of extraordinary downward flexibility in (formal sector) wages. It may therefore be reasonable to consider the observed differentials in figure 3 as reference values for unsegmented markets that account for all the effects detailed above. If this is the case, the assumption that a differential of zero represents an unsegmented market underlying many previous studies is probably unjustified.

There is, however, substantial variance in differentials across the period. Earnings in the closest substitute to formal salaried work, informal salaried work, rise from being a minimum of 69% of formal salaried wages in 1988:1 to a maximum of 83% in 1990:3 before falling to 77% in 1993:4. It might be argued that if the value of the unobserved arguments remains constant over time that the initial narrowing of 14% represents evidence in support of the dualistic view: In a downturn,

displaced formal sector workers compete in the informal sector thereby expanding the differential between rigid formal sector and market clearing informal sector earnings. But, it could also be argued that since the Pact was intended as a means of moderating salary increases, it capped them below market clearing during phase II yielding a premium to working in the unregulated sectors whose earnings would not have been affected.

The relative movements may also reflect the existence of skills or capital that are sector specific over the short run, without necessarily implying inferiority of a particular sector. Earnings of an informal skilled carpenter working on his own would rise dramatically in phase II with the increase in construction activity. Installed capital in a workshop or small store may also lead to self-employed workers preferring to earn subnormal profits in a recession if there is an expectation that in an upturn there will be supernormal profits. The reverse may also be true. A worker with substantial firm specific capital, or as Lucas (1978) postulated, little entrepreneurial ability, may ride out a wage stagnation in the formal sector should he doubt that he would earn more as a small businessman over the long run.

In sum, neither the absolute levels of differentials, nor their movement across time yield conclusive evidence in favor of either the dualistic or integrative hypotheses.

V. Sectoral Behavior and Patterns of Transition.

However, the evolution of sector sizes and the patterns of worker mobility offers can. While offering some support to the standard dualistic view, the evidence strongly suggests that the informal sector may be a desirable destination for many workers. To begin, figure 1 shows that informal self-employment attains its maximum share of the work force at the peak of the recovery in 1990.

Informal salaried employment, while less dramatic, also locally peaks in 1990. The lag behind self-employment may be due to small firms hiring only after being established for a period. Contrary to the bulk of the literature on informality, it is the informal sector that is expanding as unemployment falls and growth picks up, while formal sector employment falls. Contract work shows an initial rise after moving out the recession, but overall behaves counter-cyclically as the dualistic view would suggest. However, until 1991, it also broadly tracks movements in formal sector employment, whose employment share also behaves counter-cyclically until 1991. The similarity of the behavior of contract and self-employed earnings suggests that both may represent equally successful types of entrepreneurship, but serve different clientele: contract workers with larger formal sector firms, the self-employed with a distinct market, perhaps more oriented toward services or smaller customers.

The non-work sectors also show strong cyclical behavior. Unemployment reaches its minimum at the height of the expansion in 1990. Being out of the labor force appears to be a luxury, rather than the repository of discouraged workers, increasing as unemployment falls, and falling again as the economy worsens. The share of the labor force working as unpaid workers also behaves counter-cyclically suggesting that this subsector, roughly 2% of the workforce, may function as a safety net: when the economy worsens, perhaps paid family members, or those out of the labor force, work for free. There is no obvious explanation for the secular decline in the share of those in school.

Second, the transition probabilities standardized by terminal sector size ($P_{ij}/P_{.j}$) suggest that the increase in activity leads to greater, and relatively symmetrical, mobility between the formal and informal sectors. Mobility between formal salaried workers and the self-employed both rise as the economy strengthens going into 1990, but transitions into self-employment overall seem to rise more than the reverse (figure 2). The patterns of mobility are somewhat more obscure between the formal

salaried sector and the informal salaried and contract sectors. In the latter, there are broadly symmetrical rises in movements between sectors going into the upturn although movements into contract work become relatively more "fluid" after 1990 than the reverse transitions that dominated earlier. Movements between formal and informal salaried work, again, heighten in both directions in 1990 although any symmetries are less easy to detect. Overall, rather than a unidirectional flow back into formal sector employment with economic recovery, there appears to be accelerated re-matching across all sectors, although, again, most clearly between the self-employed and formal sectors.

Finally, statistical correlations of intersectoral mobility and unemployment do not suggest that the primary function of the informal sector is to absorb displaced labor during downturns, although they do provide some evidence of rationing. The coefficients in table 4 are those from the standard exponential form of a multinomial logit.

$$\frac{P_{ij}}{P_{ii}} = e^{\beta_j \mu} \qquad (1)$$

where the vector β_j measures the degree to which an increase in open unemployment (μ) increases the probability of a worker going to sector j relative to the probability of staying in sector i for all sectors.

Several findings at odds with the traditional dualistic view emerge from the table. First, movement into unemployment rises in downturns from all sectors, both formal and informal, and, with the exception of informal salaried work, significantly. Movements out of unemployment decrease in downturns into all sectors of paid work, although significantly only for the formal salaried, and almost at the 10% level for the informal salaried. Both findings suggest that, contrary to the dualistic

hypothesis, you can "lose" a job in the informal sector and it is not obviously easier to find informal work in a downturn. The one anomaly is informal salaried work where from OLF, school, and unpaid work, there is evidence of counter-cyclical entry, although only significantly from OLF.

Looking at transitions within paid work, several relations are also striking. First, while it is true that movements into formal salaried work fall as unemployment rises from every sector, this is also true for self-employment, confirming the procyclical behavior of sector size found earlier. Only for the transition from formal salaried to contract work is there a significant positive coefficient. Even informal salaried work shows a lower probability of entering from self-employment, and only a very insignificant positive relationship from formal salaried employment. Combined with the previous finding that all sectors contribute to unemployment, it is difficult to sustain the view that overall, the informal sectors are the safety net absorbing dismissed formal sector labor.

The increased relative movement from both school and OLF into unemployment suggests that, as much as workers losing positions, unemployment is comprised of those in school and OLF who begin to search for employment to augment their family incomes. This motivation would also explain why, from every sector, except OLF, workers are less likely to return to school, significantly so for the unemployed, unpaid, self-employed and informal salaried. The results are consistent with the findings of Revenga and Riboud (1993) who argue that most labor market adjustments in Mexico occur through dramatic falls in earnings in all sectors and thus relatively little labor is actually shed. However, the fall in real incomes does drive those out of the labor force to actively seek other sources of income, thereby driving up unemployment.

Is there evidence of queuing?

Although the logit specification captures gross tendencies during cyclical downturns for movements among the four modes of work, we can test explicitly for rationing by recasting Abowd and Farber's (1982) test for union-induced segmentation in a time series context.[14] At a given moment in time, a worker in current sector "c" will desire to switch to an alternate sector "a" if he expects a gain in utility which is a function both of earnings and of non-wage benefits of working in the sector such as those discussed in section IV. Since many of these factors-- independence, medical insurance, or other labor protections-- are not pegged to the wages, these effects are assumed to be constant across time leaving the differential rates of growth of sectoral earnings as determining the relative desirability of each sector. Together, the desire to enter the alternate sector is

$$Y_{1t} = \alpha_a \hat{W}_{at} - \alpha_c \hat{W}_{ct} - \gamma F_{ac} + \varepsilon_{1t}$$
$$\varepsilon_{1t} = (\varepsilon_{at} - \varepsilon_{ct}) \qquad (2)$$

Where γF_{ac} is the unchanging utility arising from differing non-wage benefits between sectors and W_a, W_c hat are the forecasted values from the standard Mincerian earning equation

$$W_{ct} = X\beta_{ct} + \varepsilon_{ct}$$
$$W_{at} = X\beta_{at} + \varepsilon_{at} \qquad (3)$$

where X is a vector of worker characteristics. This permits proxying for unobserved earnings in the alternate sector and avoiding bias in the estimates of α_c.[15] The time subscript on β reflects the fact that across time similar worker characteristics may lead to different earnings in each sector. This may

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[14] See Dickens and Lang (1985) for an alternate test of queuing using endogenous switching models.

[15] Replacing only the unobserved alternate wage with the forecasted variable, but using the realized current wage has the potential to bias alpha since ε_a is likely to be correlated with W_c. For this reason, both wages are replaced with the forecasted values.

result from any number of other structural or temporal factors including the level of economic activity.

This equation, however, yields only the unobserved desire to move, which may be thwarted by any factor causing queuing or that affects the probability of being offered a job in the new sector once it is desired to seek it. Since the unemployed are by definition, those looking or unable to find jobs, this probability of being offered a job is a function of the state of the labor market, μ.

$$Y_{2t} = \lambda\mu_t + \varepsilon_{2t} \tag{4}$$

Particularly during cyclical downturns, the informal sector is generally posited to serve as the reserve army of those unable, although willing, to take a job in the formal sector. The unobserved latent variable, Y_2 determines whether or not a worker is selected from the queue, a queue which may be of zero length in a period of high economic activity. The probability that an individual will be observed in, for example, the alternate sector is the probability that the worker desires to work in that sector (is in the queue) *and* is selected:

$$P_{ac} = P[\varepsilon_1 > \alpha_a \hat{W}_a - \alpha_c \hat{W}_c - \gamma F_{ac}]\ P[\varepsilon_2 > \lambda\mu] \tag{5}$$

which constitutes a partially observable bivariate probit model.[16]

[16]In estimating the probit specifications, the forecasted wages are generated by regressing, sector by sector, the earnings observed on education, experience, education squared, and experience squared for each trimester, and then generating predicted values for workers in all other sectors. Each worker therefore has predicted earnings in all four sectors. Since the constant term and coefficient values are permitted to vary in each time period, they capture any temporally varying factors including cyclical movements. Were unemployment the only temporally variant element, it would not be possible to identify eq's (2) and (4), but in practice, the individual earnings and earnings differentials and unemployment are only loosely correlated (ρ=.25).

Since there is evidence of barriers to entry to some informal sectors, the model is estimated for all possible transitions.[17] The first columns of table 5 presents the estimates of equation 5. In several cases, the coefficients on the initial and alternate earnings are very asymmetrical and there appears to be covariance between one of the earnings variables and the cyclical variable. The regressions in the following column constrain $\alpha_c = -\alpha_a$: a one percent rise in alternate sector earnings is assumed to have the same effect as a one percent decline in initial earnings. In no case, however, does the likelihood suggest that the constrained regression is a better specification than the unconstrained.

As expected, from every sector, the probability of entering the formal sector rises with the formal sector wage and significantly so (with the exception of contract work), and falls with the rise in initial sector earnings, although never significantly. From all other sectors, the cyclical variable enters significantly and negatively in at least one of the two specifications. This suggests that there is queuing to enter the formal sector that is exacerbated in cyclical downturns.

However, the previous findings of pro-cyclical movements into self-employment are also preserved although their decreased significance suggests that much of the negative correlation with unemployment was due to the large accompanying relative earnings movements shown in figure 3: in a downturn, the returns to self-employment falls and fewer workers want to move. The still significant coefficient from salaried informal employment does offer evidence of barriers to entering self-employment.

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[17] See, for example, Assaad (19950. Turnham and Eröcal (1990) argue "... Perhaps it may not be too far-fetched in most cases to suppose that the condition of being unemployed actually signifies an inability to operate as an entrepreneur or to gain access via a family connection [to self-employment. To the extent that this is true, the unemployed are, in effect, only competing for work in the wage labor market" (p. 32).

The informal salaried sector appears to be the one sector where a strong case can be made for the traditional view of the role of the informality. Rationing appears entering both the self-employed and the salaried formal sector, and it is the only sector for which a significant positive sign appears on the cyclical variable when entering from formal salaried employment. While the interpretation in a queuing context is not obvious, the results do suggest that the sector may absorb labor shed from formal employment.

V. Why Might Workers Prefer Informality?

Taken together, the data is suggestive of a heterogeneous informal sector. That there is evidence of queuing to enter the formal sector suggests that some fraction of the sector serves as a reserve sector as traditionally conceived. But the fact that self-employment overall is procyclical in size, and in probability of entering from all other sectors, suggests that this, the largest segment of informality constituting 25% of paid work, is best thought of as a desirable destination sector in itself. This conclusion is consonant with Gregory's finding, analyzing less comprehensive data from 1940-1980, that the Mexican labor market is reasonably well integrated.

There may be two overarching reasons that workers may prefer informal jobs, particularly self-employment despite the ostensibly large benefits of being formally employed.

First, the inefficiencies and rigidities in formal sector regulations affect workers' demand for formal employment as well as formal firms' demand for labor. This is particularly the case in the absence of a binding minimum wage where, as discussed before, overall remuneration must be equal across sectors, but the costs of non-wage benefits is implicitly paid by workers through lower wage remuneration. Should the value of benefits to the worker fall below the implicit tax, it would be

preferable to move into an informal sector where payment is entirely monetary. And, a key difference between LDCs and industrialized countries is that incomplete regulation of the labor market and small firm sector gives some entrepreneurs and employees exactly this choice of how to receive payment.

Several possible sources of such a wedge appear both in the nature of the labor protections system and in interviews with workers. First, since an entire family is covered by medical benefits, when any one member is formally employed, the marginal value of benefits to the second formal sector worker is zero. Second, the quality of many services is often poor and administrative overhead costs are very high causing some workers to see mandatory contributions to benefits programs as a disadvantage of formal salaried work.[18] Third, leaving formal sector employment voluntarily may not necessarily imply the loss of large separation benefits since, as Balán et al (1973) argue, many workers are not in a particular job long enough to accumulate much seniority.

This view is plausibly consistent with the differentials observed in figure 3. The roughly 30% premium of self-employment and contract earnings over formal salaried wages, although still including the value of lifestyle and risk premia, and taxes, is at the low end of the estimated 30-60% in non- wage costs to firms. The persistent discount experienced by the informal salaried relative to the formal could be explained if the value of benefits and the risk of working for family members were perceived as low, and the value of avoided taxes, in kind payments, and training is high.

This logic applies to all three sectors although it is compelling only where small scale firms can offer remuneration comparable to that earned in the formal sector--among low productivity workers unlikely to generate much firm specific human capital. This gives rise to a second reason

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[18] In his interviews with Guadalajaran workers, Roberts (1989, p. 50) found that "many informants cited the deductions made for welfare as a disadvantage of formal employment, particularly since the services they received were poor."

that, particularly self-employment, may be desirable. Being one's own boss is valued in the industrialized world, and there is no reason to think that developing country workers value their independence less. There is support in the extensive interviews of Monterrey workers undertaken by Balán, et al. (1973), and increasingly elsewhere, for a "life cycle" pattern where workers enter into salaried work, accumulate knowledge, capital, and contacts, and then quit to open their own informal businesses. The low formal sector productivity and firm specific capital reduce the opportunity cost of such moves and should lead to an increased share of self-employment in total work.

VI. Trade Reform and Sub-Contracting:

In phase II, contract work is not obviously a disadvantaged sector. Figure 3 suggests that contract earnings follow the same increase relative to formal salaried wages shown by the self-employed. Mobility between the formal and contract sectors is heightened during the upturn of phase II. It is possible that contracting exists partially as a Pareto improving way to avoid the inefficiencies in the labor legislation (or duplication of benefits coverage) discussed above, rather than to avoid the legislation per se, and that efficient workers may do better on a piece rate basis in good times than working in a factory.[19]

However, the data after 1991 may suggest a less sanguine interpretation of increased outsourcing to reduce labor costs in the face of increased global competition. Figure 1 reveals a secular decline in the contribution of formal salaried work, from over 38% to 35% of the interviewed

[19] Roberts'(1989) Guadalajara interviews suggest that given the very weak unions and low wages, informalization is not primarily a strategy for reducing remuneration and worker control over production: "Market uncertainty and the large number of income opportunities in the city mean that it is useful for *both* employees and employers to have flexibility in allocating labor."(italics added, p. 48).

sample. This decline is offset by a rise in the share of contract workers and the informal salaried while the rate of transition into contract work from formal sector work now exceeds the rate of reverse transition. It is clear from figure 3 that contract earnings are falling at a more rapid rate than any other sector, suggesting that workers are not better off as a result of this trend. On the other hand, contract earnings are always the most volatile of the four series so it is not obvious that they are losing relatively more than would be the case in any previous downturn.

This evolution appears correlated with a restructuring of the manufacturing sector that is very likely related to increased external competition. Tables 2 & 3 show that while from 1990 to 1994 manufacturing grew 7.8%, employment in the sector actually *fell* 8.5%. The competitive cushion offered by the high real exchange rate and soft labor market in the early part of the period may have delayed the bite of reduced protection until 1990 and several manufacturing sectors sharply reversed their expansions of the late 1980's during this period.[20] It is in 1990 that the trade balance becomes negative for the first time since 1982 due both to a rise in imports as a share of GDP from 13.3% in 1987 to 18.9% in 1993 and a fall in exports from 17% in 1990 to 14% in 1993. Thus, the pressure to cut costs and restructure arguably appeared only at the end of phase II, the period when contract work begins its secular expansion. Though only micro-analysis of individual firm behavior can confirm whether the sub-contracting is in fact related to global competitive pressures, the evidence here suggests that this is the case.

[20] Textiles fell 15.7% from 1990-1994, wood products fell 18% from 1991-94, paper products fell 7.9% from 1990 to 1994. Sexto Informe de Gobierno, 1994.

VII. Conclusions

The results suggest that a fraction of the informal sector conforms to the traditional dualistic conception of the unprotected worker. The narrowing of earnings differentials during economic recovery and the evidence of queuing for entry into formal salaried are consistent with a reserve sector role during downturns. Further, the behavior of the contract sector after 1990 does suggest that workers are being shifted from the protected to informal sector as a way of reducing costs, possibly with a reduction in their welfare.

However, for the bulk of the sector, informality does not imply inferior work. The largest component of the informal sector, self-employment, behaves pro-cyclically, expanding during upturns, and also shows evidence of queuing for entry. A more apt conception is that of a small scale, entrepreneurial sector, akin to those found in industrialized countries, but unregulated. This interpretation does not rule out the dualistic view dominating when minimum wages are binding far above market clearing. But where they are not, the taxes on formal workers implicit in the labor legislation, and the generally low levels of formal sector productivity, make working in an informal business a desirable alternative. Much of the informal sector may therefore represent an efficient allocation of labor that would persist even in the absence of labor market distortions.

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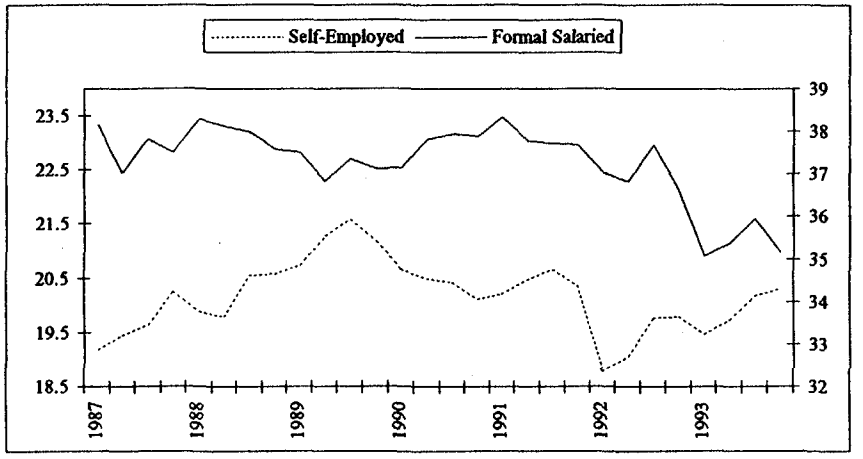
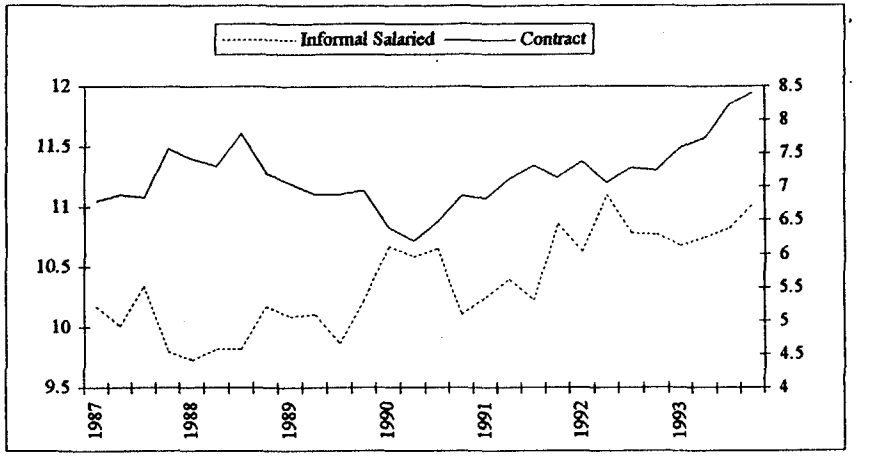
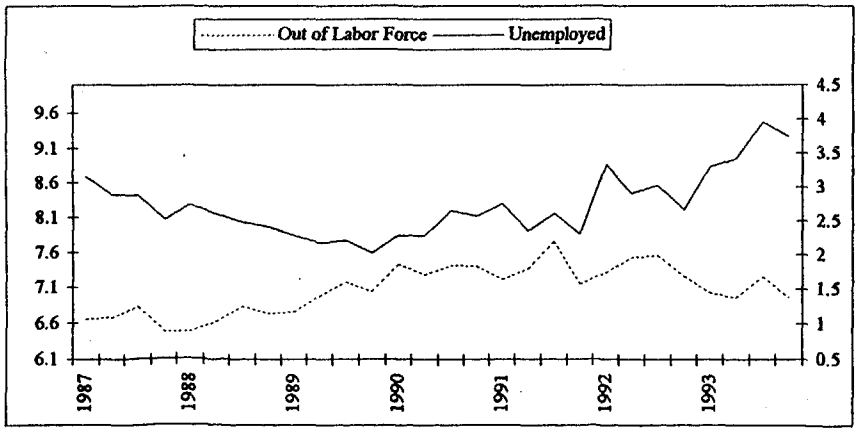
Figure 1: Sectoral Composition of Mexican Labor Force, 1987-1993

Paid Employment





Unpaid or not Working



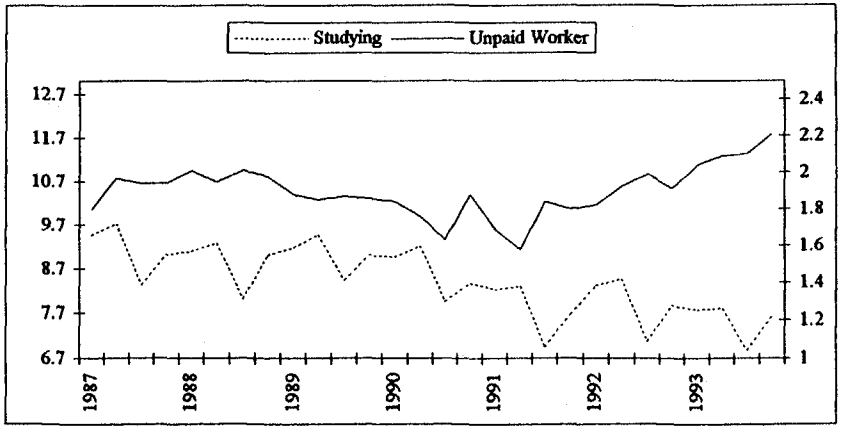
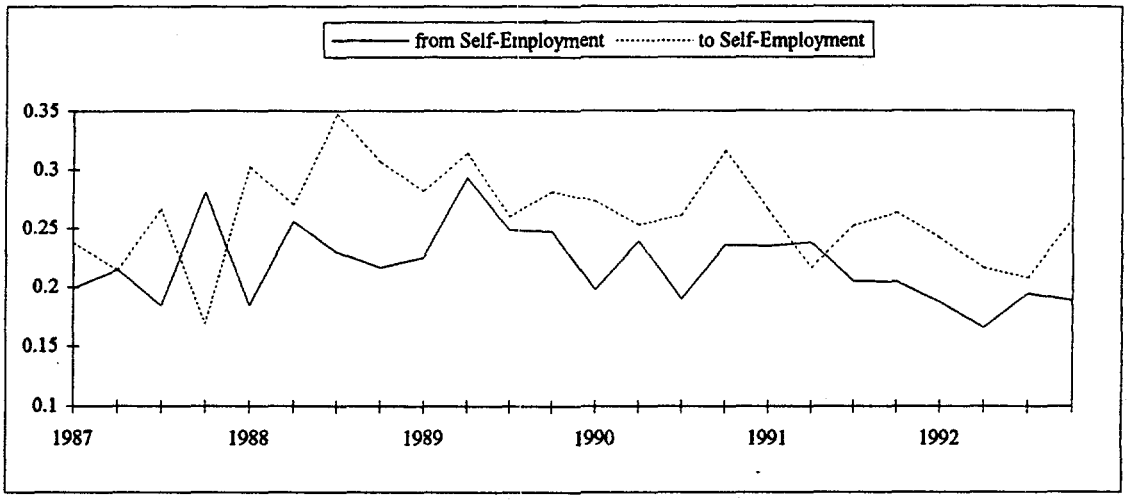
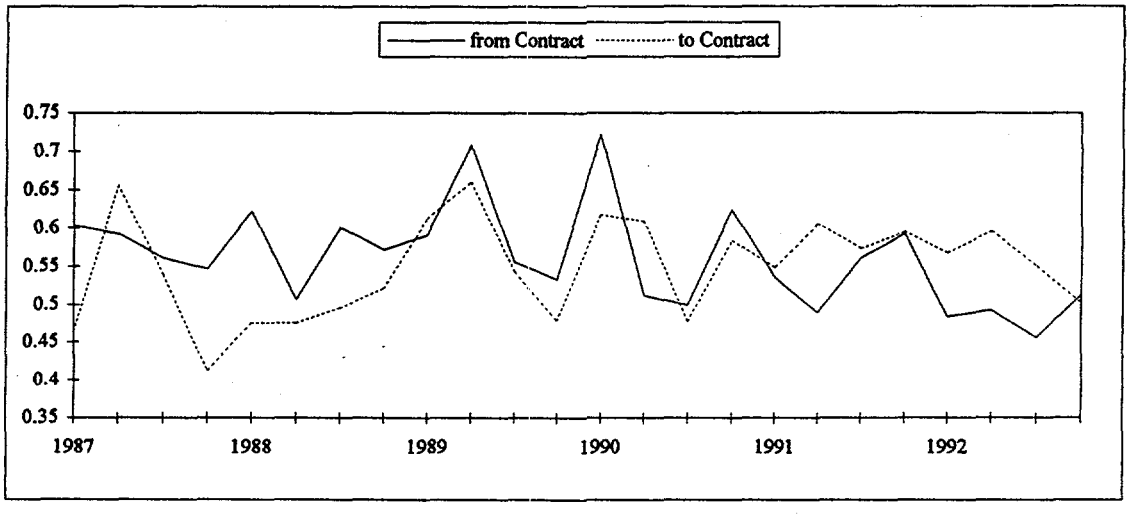
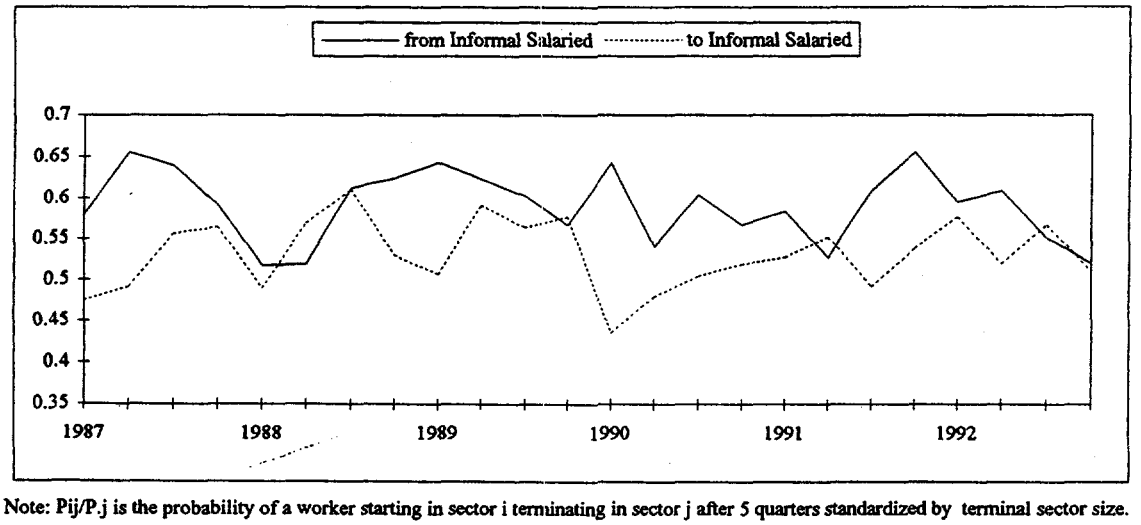


Figure 2: Transition to and from the Formal Sector (Pij/P.j) across 5 Quarters







Note: Pij/P.j is the probability of a worker starting in sector i terminating in sector j after 5 quarters standardized by terminal sector size.

Figure 3: Conditional Median Real Hourly Earnings

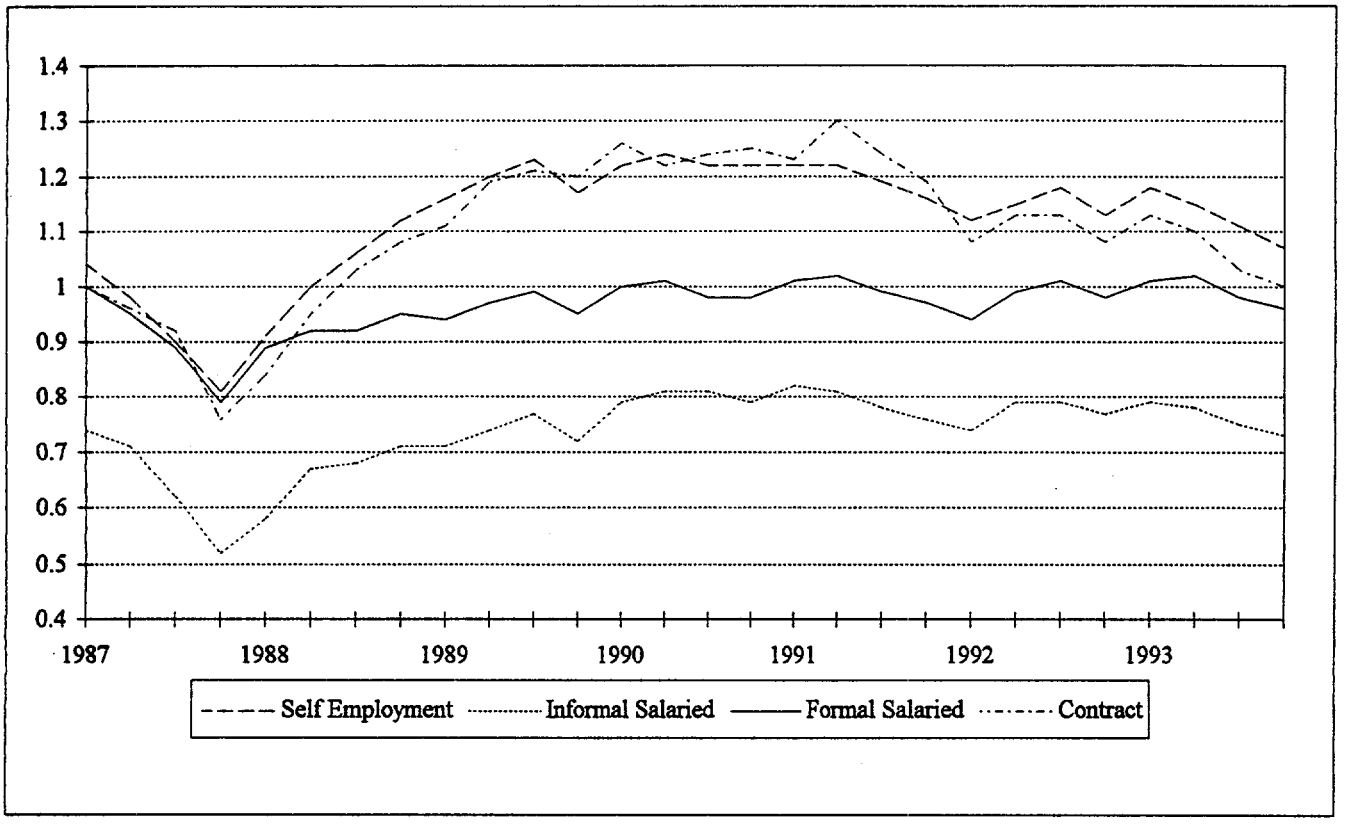


Table 1: Open Unemployment (Percent)

	u		u		u		u
1976	6.8	1981	4.2	1986	4.3	1991	2.6
1977	8.1	1982	4.2	1987	3.9	1992	2.8
1978	6.8	1983	6.3	1988	3.6	1993	3.4
1979	5.7	1984	5.7	1989	3	1994	3.6
1980	4.6	1985	4.3	1990	2.8	1995	6.4*

Source: Lustig (1992) pp 22, 70; Sexto Informe de Gobierno, 1994
*Provisional, Indicadores Economicos, Banco de Mexico.

Table 2: GDP and Growth by Sector (Millions of 1980 Pesos and %)

	GDP	%	Manu	%	Const	%
1986	4736	-3.74	995.8	-5.26	239.5	-10.33
1987	4824	1.86	1026.1	3.04	246.2	2.80
1988	4884	1.24	1059	3.21	245.2	-0.41
1989	5047	3.34	1135.1	7.19	250.4	2.12
1990	5272	4.46	1203.9	6.06	267.8	6.95
1991	5463	3.62	1252.2	4.01	274.3	2.43
1992	5616	2.80	1280.7	2.28	295.7	7.80
1993	5641	0.45	1261.7	-1.48	304.7	3.04
1994*	5836	3.46	1297.3	2.82	334.2	9.68

Source: Sexto Informe de Gobierno 1994.
* Imputed from Indicadores Economicos, Banco de Mexico

Table 3: Employment and Growth by Sector (Thousands and %)

	Total	%	Manuf	%	Const	%
1986	21640.1	-1.44	2404.1	-1.88	1891.4	-3.28
1987	21863.5	1.03	2429.8	1.07	1897.8	0.34
1988	22051.2	0.86	2431.9	0.09	1903.9	0.32
1989	22330.9	1.27	2492.7	2.50	2129.1	11.83
1990	22536.4	0.92	2510.3	0.71	2411.1	13.25
1991	23121.5	2.60	2498.8	-0.46	2489.1	3.24
1992	23216.3	0.41	2447.2	-2.06	2629.9	5.66
1993*	NA	NA	2343.9	-4.22	NA	NA
1994*	NA	NA	2298.1	-1.95	NA	NA

Source: Sexto Informe de Gobierno 1994.
* Imputed from Indicadores Economicos, Banco de Mexico, NA=Not Available

Table 4: Determinants of Probabilities of Transition Across 5 Quarters, 1987-1993

Multinomial Logit

Initial Sector:	OLF		School		Unemployed		Unpaid		Self -Employed		Informal Salaried		Formal Salaried		Contract	
Final:	con	unem	con	unem	con	unem	con	unem	con	unem	con	unem	con	unem	con	unem
Out of labor Force			-2.64**	0.05	0.69	-0.12	-3.39**	0.59*	2.15**	-0.21**	-1.8**	-0.14	-3.39**	-0.02	-3.2**	0.15
			(0.42)	(0.15)	(0.48)	(0.17)	(0.72)	(0.26)	(0.22)	(0.08)	(0.36)	(0.13)	(0.22)	(0.08)	(0.49)	(0.18)
Studying	-3.94**	0.23			1.4*	-0.98**	0.97	-0.84**	-3.65**	-.70**	-1.9**	-0.35*	-4.12**	-0.2	-3.95**	-0.005
	(0.54)	(0.19)			(0.80)	(0.30)	(0.62)	(0.23)	(0.9)	(0.34)	(0.49)	(0.18)	(0.40)	(0.15)	(0.89)	(0.32)
Unemployed	-3.78**	0.54*	-3.71**	0.35**			-2.02**	-0.16	-4.65**	0.29**	-3.08**	0.19	-5.00**	0.47**	-5.33**	0.78**
	(0.33)	(0.12)	(0.47)	(0.17)			(1.01)	(0.37)	(0.37)	(0.13)	(0.42)	(0.15)	(0.24)	(0.08)	(0.59)	(0.21)
Unpaid Worker	-5.34**	0.63*	-2.39**	-0.05	-2.88**	0.27			-4.18**	-0.07	-2.6**	0.04	-6.25**	0.3	-3.65**	-0.15
	(0.62)	(0.22)	(0.43)	(0.16)	(1.10)	(0.40)			(0.48)	(0.18)	(0.41)	(0.14)	(0.57)	(0.20)	(0.94)	(0.34)
Self-Employed	-1.3**	-0.12	-4.16**	0.35*	0.8	-0.22	-0.88*	0.01			-0.07	-0.22**	-1.78**	-0.28**	-0.83**	-0.04
	(0.25)	(0.09)	(0.58)	(0.21)	(0.50)	(0.18)	(0.51)	(0.18)			(0.19)	(0.07)	(0.14)	(0.05)	(0.23)	(0.08)
Informal Salaried	-3.06**	0.28*	-2.39**	0.15	0.78	-0.31	-1.34**	0.28	-1.85**	-0.13**			-2.87**	0.07	-0.93**	-0.12
	(0.33)	(0.12)	(0.33)	(0.12)	(0.53)	(0.19)	(0.46)	(0.16)	(0.17)	(0.06)			(0.15)	(0.05)	(0.26)	(0.09)
Formal Salaried	-1.52**	-0.15	-1.18**	-0.08	2.29*	-0.55*	-1.02*	-0.05	-1.07**	-0.37**	0.11	-0.18**			0.22	-0.31**
	(0.29)	(0.10)	(0.26)	(0.09)	(0.45)	(0.16)	(0.57)	(0.21)	(0.16)	(0.06)	(0.17)	(0.06)			(0.2)	(0.07)
Contract	-3.77**	0.23	-3.87**	0.24	-0.46	-0.11	-3.8**	0.59*	-2.71**	0.05	-1.7**	0.1	-3.38**	0.16**		
	(0.50)	(0.18)	(0.58)	(0.21)	(0.66)	(0.24)	(0.87)	(0.31)	(0.2)	(0.07)	(0.25)	(0.09)	(0.17)	(0.06)		
Number of obs	9255		7175		3180		2183		27416		12224		50033		9164	
chi squared	41.13**		10.96		24.88**		31.36**		55.83**		26.21**		73.81**		37.28**	
Likelihood	-12548		-9933		-5856		-3945		-29538		-20225		-43762		-13695	

Notes: Worker transitions among sectors across five quarter period using overlapping panels from 1987-1993, Mexican National Survey of Unemployment.

Unem is average unemplyment rate across period. Standard Errors in (), *= significant at 10%, ** at 5%.

Table 5: Determinants of Probabilities of Transition Across 5 Quarters , 1987-1993.

Partially Observed Bi-Variate Probit

Initial	Self-Employed						Informal Salaried					
Final	Informal Salaried		Formal Salaried		Contract		Self-Employed		Formal Salaried		Contract	
Const 1	-36.39**	0.09	45.15*	5.21**	-1.43	-0.08	13.90**	0.11	4.81**	0.12	3.57	0.25
	(5.28)	(12.72)	(12.42)	(1.80)	(55.32)	(112.6)	(1.86)	(0.48)	(0.95)	(0.30)	(14.82)	(67.95)
Wi	-0.43		-3.85		-0.1		1.04**		-0.29		0.58	
	(0.50)		(2.53)		(3.73)		(0.24)		(0.21)		(1.45)	
Wa	-4.39**		9.38*		0.05		0.81**		0.96**		-0.03	
	(0.80)		(2.66)		(1.8)		(0.18)		(0.17)		(0.19)	
Wa-Wi		0.51		12.7**		0.14		3.41		2.26		-0.19
		(4.17)		(5.00)		(12.11)		(2.37)		(1.47)		(10.89)
Const 2	-1.14**	-0.45	-0.63*	-0.61**	-0.22	-1.12	3.52	-0.09	6.88**	0.6	0.78	-0.56
	(0.10)	(8.42)	(0.09)	(0.10)	(112.5)	(58.80)	(3.14)	(0.14)	(3.00)	(0.52)	(10.31)	(36.47)
Unem	0.003	-0.12	-0.21*	-0.22**	0.06	0.03	-0.81	-0.09**	-1.76	-0.17**	0.15	0.06
	(0.03)	(0.50)	(0.03)	(0.03)	(6.13)	(1.17)	(0.84)	(0.04)	(0.88)	(0.07)	(5.83)	(1.76)
Nobs	21492	21492	21831	21831	20873	20873	6659	6659	7453	7453	5529	5529
Likelihood	-6803	-6873	-7610	-7617	-5344	-5345	-4129	-4227	-4985	-5003	-2732	-2738
chi squared	148.28**	9.19**	64.18*	50.38**	1.13	0.86	212.37**	17.47**	83.03**	48.32**	13.77**	1.69

Initial	Formal Salaried						Contract					
Final	Self-Employed		Informal Salaried		Contract		Self-Employed		Formal Salaried		Informal Salaried	
Const 1	-1.23	-0.15	-13.01*	0.18	-3.71**	-1.49**	3.63	0.18	-2.91	1.72	-22.27**	0.50
	(1.17)	(26.30)	(1.58)	(0.45)	(0.53)	(0.19)	(25.83)	(68.88)	(6.71)	(1.37)	(5.24)	(29.10)
Wi	-0.29		-2.14**		-0.85**		0.02		-0.99		-0.87**	
	(4.24)		(0.33)		(0.12)		(2.59)		(2.22)		(0.38)	
Wa	0.13		0.56**		0.55**		0.44		0.48		-2.01**	
	(1.91)		(0.17)		(0.12)		(2.59)		(1.11)		(0.52)	
Wa-Wi		0.28		3.51**		0.78**		0.15		1.71		0.29
		(5.90)		(0.61)		(0.12)		(9.42)		(2.23)		(7.13)
Const 2	-0.64	-0.60	-0.91**	-1.03**	-1.66**	-1.90**	0.03	0.09	065	0.38	0.06	-0.10
	(11.52)	(18.71)	(0.31)	(0.24)	(0.76)	(0.76)	(5.66)	(63.01)	(1.22)	(0.30)	(0.39)	(16.61)
Unem	-0.15	-0.15	0.46	0.16**	0.73	0.82	-0.02	-0.04	-0.29*	-0.25**	-0.04	-0.11
	(0.75)	(1.20)	(0.41)	(0.05)	(0.57)	(0.51)	(0.12)	(2.06)	(0.17)	(-0.07)	(0.09)	(1.05)
Nobs	42447	42447	42108	42108	41480	41480	5425	5425	6001	6001	5004	5004
Likelihood	-10999	-10999	-9841	-9841	-8262	-8270	-3210	-3213	-3868	-3869	-2556	-2628
chi squared	31.05**	29.53**	895.08**	529.39**	102.09**	85.52**	5.94	0.63	23.56*	21.35*	145.20**	2.28

Notes: Worker transitions among sectors across five quarter period using overlapping panels from 1987-1993, Mexican National Survey of Unemployment.

Wa, Wi are forecasts of initial and alterate sector wages in logs. Wa-Wi constrains coefficients equal and opposite. Unem is average unemployment rate across period. Partially observed probit regressions contain two constants, one for inclination to move equation, and one for queuing equation.

Standard Errors in (), *= significant at 10%, ** at 5%.

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